

INFORMATION: Policy Regarding Compliance With
Control System Operations Test § 25.683

Date: SEP 16 1986

Manager, Aircraft Certification Division, ANM-100

Managers, ANM-100S, ANM-100L ASW-100, ACE-100, ANE-100, AWS-102

Section 25.683, which contains the requirement for a control system operation test, was amended in 1970 by Amendment 25-23. Its predecessor, § 4b.328 of the Civil Air Regulations (CAR), required testing to 80 percent limit load specified for the control system. This load was applied to both the control system and control surface. It was recognized that in powered control systems 80 percent pilot effort (§ 25.397) would result in 100 percent loads in the powered portion of the control system. The rule was amended to reflect this more realistic condition. The only difference between the earlier rule and the present rule is in the powered portion of the control system where the loads changed from 80 percent of limit load to 100 percent of the maximum load expected in normal operation. For most airplanes with powered systems, this would be full system output.

Although a feel system may not produce 80 percent of pilot effort, certain malfunctions or failures, not considered extremely improbable, could create high pilot effort loads. The test with pilot effort of 80 percent should assure sufficient stiffness in the control runs to prevent bottoming of the controls before adequate input to the powered portions is achieved. It is conceivable a control system could have an extremely soft cable run with low pilot forces for normal operation and still pass the limit load static tests. Therefore, the portion of the control system subjected to pilot effort loads should not bottom when 80 percent of limit pilot effort is applied with the controls blocked in the neutral position at the powered portion.

The use of a lower value of pilot effort would require an exemption from the requirements of § 25.683.

We have attached a diagram that will help clarify the applicability of these requirements.

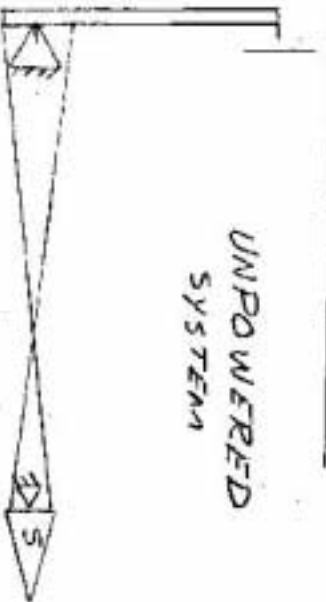
Original Signed by

Darrell M Pederson
for
Leroy A. Keith

Attachment

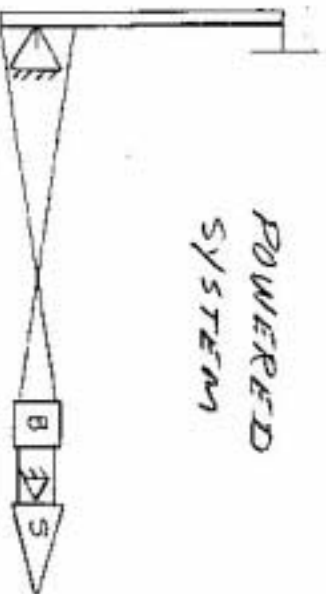
PRE AMDT. 25-23

UNPOWERED
SYSTEM



80% Limit
(PILOT EFFORT)

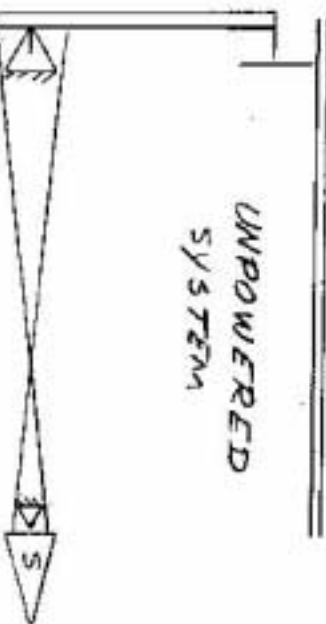
POWERED
SYSTEM



80% Limit

POST AMDT 25-23

UNPOWERED
SYSTEM



80% Limit
(PILOT EFFORT)

POWERED
SYSTEM



80% Limit
(PILOT EFFORT)

MAX. NORM
OPERATIO
LOADS